

comprising:

a nut having an internal screw thread barrel; and
a fastener insert disposed within said barrel which is formed from a metal alloy which is resistant to galling, wherein at least a portion of said fastener insert is substantially diamond shape in cross-section.

Please cancel Claim 17.

REMARKS

Claims 1-19 are now pending in the application. In this response, Applicants have amended Claims 1, 6, 10 and 14 and have requested cancellation of Claims 2, 7, 11 and 14.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1, 2, 6, 20 and 14-16 currently stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Toosky in view of Schumacher. In this regard, the Examiner believes it would have been obvious for one of ordinary skill in the art to make the insert of Toosky out of a material as disclosed in Schumacher because an alloy which itself resists galling would be preferable to a separate coating or plating as currently employed in Toosky.

Claims 3-5, 7-9, 11-13 and 17-19 currently stand rejected under 35 U.S.C. § 103(a) as being unpatentable over modified Toosky as applied to Claims 1, 2, 6, 10, 14 and 16 in further view of Cosenza. The Examiner believes it would have been obvious for one of ordinary skill in the art to make the insert of Toosky of a shape as disclosed in Cosenza because the shape of the insert of Cosenza provides for superior thread engagements.

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Claims 3, 7, 11 and 17, respectively, remarks relating to proposed combination of the references will now be presented.

Initially, Applicants must again draw the Examiner's attention to the fact that nowhere in Toosky is it taught or suggested that the insert has anything but a coating to prevent galling. In particular, not only does Toosky not teach the composition of the threaded inserts to be anti-galling, but he specifically teaches away from the possibility of the composition of the threaded insert to be the element necessary to prevent galling. Toosky states that the threaded insert includes a *plating to lubricate and prevent galling of the insert* at col. 5, lines 17+. Applicant respectfully submits that one skilled in the art would not look to modifying a teaching relating to the combination of lubrication and resistance to galling by the same element, e.g., a plating, to achieve a non-plated fastener insert which is resistant to galling.

Additionally, Applicants respectfully submit that while the stainless steel of Schumacher et al. is said to be workable into plate, sheet, strip, bar or rod, there is no indication that such materials could withstand the dimensional tolerances necessary to form helically coiled fastener inserts, particularly those having a substantially diamond shaped in cross-section.

Cosenza which is cited as disclosing a fastener insert of a shape similar to that claimed under the present invention, e.g., a coiled insert, also fails to provide sufficient basis for recognizing that dimensional tolerances differ depending on the shape and alloy type to be employed. This, coupled with the fact that Schumacher merely discloses a cylindrical shaped fastener insert, provides additional support to the proposition that the prior art has not in any way suggested the desirability of the present invention.

The references of record also fail to disclose or appreciate that an enhanced surface area for mating receipt of a threaded fastener is desirable. By providing at least some, and preferably all, of the insert convolutions with a substantially diamond shape in cross section, a greater surface area is achieved along the internal screw thread convolutions. The added

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insert, as well as between the insert and the tapped hole of a substrate for retention of the fastener is achieved.

"The mere fact that the prior art may be modified...does not make the modification obvious unless the prior art suggests the desirability of the modification." In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). In the present case, the references of record have not taught the invention or suggested the desirability of the modifications offered by the present invention.

Furthermore, an indication of non-obviousness may be a long felt need in the art. In particular, in *Sibia Neurosciences, Inc. v. Cadus Pharmaceutical Corp.*, 55 U.S.P.Q.2d 1927, 1930 (Fed. Cir. 2000), the court states that inquiries into the facts of non-obviousness include "evidence of non-obviousness such as long felt need." From the art cited, there is an evidence of a long felt need for a threaded insert which has anti-galling properties in and of itself, absent any coatings or platings. In this regard, the Examiner's attention is directed to the fact that the Schumacher patent which purportedly teaches the alloy of interest was filed in 1973, while the threaded insert of Toosky which appears to suggest the anti-galling benefit of a plating on an insert was filed in 1997. While Applicants maintain their contention of non-obviousness, the extended period of time between the references of record, should itself be sufficient evidence of a long felt need in the art for an anti-galling fastener insert. If necessary, the Applicant is willing to submit an affidavit supportive of this long felt need in the industry for an anti-galling threaded insert.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and

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application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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The following is a marked up version of each replacement paragraph and/or section of the specification in which underlines indicate insertions and brackets indicate deletions.

After forming the alloy into a round wire and allowing the wire to cool to room temperature, the wire is shaped to include at least a portion of wire having a substantially diamond shaped cross section. The wire is [and subsequently] formed into an insert having a significant amount of surface area along the internal screw thread convolution. The resulting fastener inserts should have excellent anti-galling characteristics at both ambient and elevated temperatures. Further, the fastener inserts should have good corrosion resistance and a room temperature yield strength which surprisingly is almost twice that of fastener inserts formed from 304 type stainless steel. The nitrogen strengthened stainless steel fastener inserts of the present invention also provide excellent oxidation resistance and excellent impact strength, particularly at sub-zero temperatures.

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The following is a marked up version of each amended claim in which underlines indicates insertions and brackets indicate deletions. Claims 3, 7, 11 and 14 have been cancelled.

1. (Amended) A fastener insert formed from a nitrogen strengthened stainless steel alloy comprising:

- a) from about 0.05 to .15% carbon;
 - b) from about 5.0 to 12.0% manganese;
 - c) from about 2.0 to 6.0% silicon;
 - d) from about 12.0 to 20.0% chromium;
 - e) from about 6.0 to 12.0% nickel;
 - f) from about 0.02 to 0.8% nitrogen;
- with the remainder being iron[;].

wherein at least a portion of said fastener insert is substantially diamond shaped in cross-section.

6. (Amended) A helically coiled screw thread insert for receiving a threaded fastener, said insert being formed from an alloy comprising:

[a nitrogen strengthened stainless steel alloy. The stainless steel alloy preferably will include a positive amount up to a total of about 0.8% nitrogen. More particularly, the present invention relates to a nitrogen strengthened stainless steel insert formed from an alloy comprising:] a) from about 0.05 to 0.15% carbon; b) from about 5.0 to 12.0% manganese; c) from about 2.0 to 6.0% silicon; d) from about 12.0 to 20.0% chromium; e) from about 6.0 to 12.0% nickel; f) from about 0.02 to 0.8% nitrogen; with the remainder being iron, at least a portion of said fastener insert having a substantially diamond shape in cross section.

fastener, said insert being formed from an alloy comprising:

a) from about 0.08 to 0.1% carbon; b) from about 7.0 to 9.0% manganese; c) from about 3.5 to 4.5% silicon; d) from about 16.0 to 18.0% chromium; e) from about 8.0 to 9.0% nickel; f) from about 0.08 to 0.18% nitrogen; with the remainder being iron, at least a portion of said fastener insert having a substantially diamond shape in cross-section.

14. (Amended) A nut assembly for use in association with a threaded fastener comprising:

a nut having an internal screw thread barrel; and

a fastener insert disposed within said barrel which is formed from a metal alloy which is resistant to galling, wherein at least a portion of said fastener insert is substantially diamond shape in cross-section.